Prof. Sérgio de Jesus

Abstract

The ocean is vast, rich, fragile and unexplored. Despite a massive investment in the last years, ocean exploration remains localized at the ocean surface and in shallow coastal areas, covering merely 5% of the total volume.

It is well known that marine life has perfectionned acoustics as its primary sense for every day tasks such as locating preys, sensing danger, mating, etc. So, in the ocean, sound has the same role as light on land. It is well known that sound propagates to long distances in the ocean and hence acoustics can be seen as the ONLY mean to "see" the ocean interior at a global scale, in strict respect of the environment and at a reasonable cost.

There is nowadays scientific evidence that listening to ocean ambient sound allows to retrieve information about i) anthropogenic sound, related to man activities such as shipping, bathymetric sonar, industrial construction, echo sounding and defense; ii) environmental related sound such as that of earthquakes, ice, rainfall, waves and wind, and iii) biological related sounds as for example, that of marine mammals, fish and the acoustic activity of invertebrates in coastal areas. Ambient sound can also be used for indirectly estimating environmental and biological quantities such as sub-bottom structure or coastal flora health and abundance.

This paper presents an overview of recent results for some of those passive acoustic imaging techniques.